REMARKS

Applicant has carefully considered the Examiner's very extensive Final Office Action which was mailed August 30, 2005. In responding thereto, claim 23 has been amended to address the outstanding objection. In view of the Examiner's requirements, claims 66 and 67 have been canceled without prejudice.

Independent claims 1, 35 and 60 have been amended so as to more clearly set forth the present invention. Neither they nor their dependent claims are anticipated nor made obvious by Finn et al. as described below.

Anticipation under US patent law requires, relative to the subject prior art, that:

> "The identical invention must be shown in as complete detail as contained in the claim...The elements must be arranged as required by the claim" (MPEP 8th Edition, Rev. 2 (May 2004) page 2100-73).

As explained below, the various outstanding anticipation rejections of the subject claims do not comply with the required standard.

In rejecting claim 14, now incorporated into claim 1, the Examiner stated:

> "Finn teaches finding a minimal length cycle for each unordered pair of locations (e.g., at length less than that designated by the maximum number of knowns on a path, see Col. 27, lns. 57-67, noting also that "trees may be selected to optimize any criteria"; see also Col. 29, lns. 35-37 regarding minimal number of connections)" (Office Action last two lines page 5, first 2 lines page 6)

The above stated basis for rejecting claim 14, now incorporated in to claim 1, is deficient in that it has failed address the specific limitation of claim 14 which requires:

> "wherein finding a list of candidate cycles includes finding a minimal length cycle for each unordered pair of locations" (Claim 1 currently amended).

We first note that at Finn et al. is completely silent as to "finding a minimal length cycle for each unordered pair of locations".

Finn et al. describe a process which includes, see Fig. 3 thereof:

1. Selecting a source node, step 50

2. Selecting a cycle around the source node, step 52

3. Assigning various source node values to the source node and each of the nodes in the cycle, steps 54-58

4. Constructing a first set of arcs which connect an upstream node and a downstream node, step 60

5. Constructing a second set of arcs which connect an upstream node and a downstream node, step 62

Figs. 3A and 3B are extensions of the steps of Fig. 3. None of those figures nor the text describing same imposes any characteristics on the selected cycle, step 52. Further, only a single cycle is selected in connection with the process of Fig. 3, 3A and 3B. In this regard Finn et al. state:

> "Turning now to Fig. 3, as shown in processing steps 50 and 52, processing begins by defining one of the network nodes as a source nodes and selecting a cycle containing the source node S and a plurality, here k, additional nodes denoted as c1...ck. Then, as shown in steps 54, 56 first and second source node values are assigned to the source node in accordance with predetermined criteria. In one particular embodiment, the criteria requires that the second source node value be less than the first source node value. ...where k corresponds to the number of nodes in the cycle excluding the source node...Processing then flows to processing steps 60 and 62 where a first set of arcs connecting an upstream node and a downstream node and a second set of arcs connecting a down stream node and an upstream node are respectively computed." (Col. 20, lines 5-46 Finn et al.)

None of Figs, 3, 3A, 3B nor the above described description from Finn et al. addresses:

> finding a list of candidate cycles by "finding a minimal length cycle for each unordered pair of locations." (Amended Claim 1)

Col. 27, lines 57-67 of Finn et al. cited by the Examiner in support of the anticipation rejection of claim 14 do not make up for the above deficiency. For example those lines state:

> "Referring now to FIG. 7, a flow diagram illustrating the steps to select a pair of redundant trees using a predetermined criteria are shown. In this particular example, optimum trees based on a longest path criteria are selected. It should be noted, however, that trees may be selected to optimize any criteria including but not limited to load balancing, path costs, reliability of paths, maximum number of nodes on a path, average number of nodes traversed by a communication session, symmetry of trees, separability of sub-trees, maximum load on a link and average transmission costs." (Col. 27, lines 57-67 Finn et al. US Patent No. 6,728,205)

The above reference and discussion of Fig. 7 does not relate to "finding a list of candidate cycles" as claimed. That text addresses the selection of redundant trees, for example see Fig. 2A, 2B of Finn et al. where the length of the cycle, selected in step 52 Finn et al. is never considered. Further, Finn et al. addresses only a single cycle at a time in the processing described above. The Examiner's further reference to Col. 29, lines 35-37 of Finn et al. does not address the above-noted deficiencies. Those lines state:

> "Each of the BLSR UPSR and MFBG approaches result in a minimum number of protected SPTP unicast or multicast connections corresponding to C protected connections" (Col. 29, lines 35-37 Finn et al.)

The noted paragraph grows out of an earlier discussion dealing with bandwidth allocation required to carryout automatic protection (Col. 29, lines 3-14 Finn et al.). Noting whatsoever of the above quoted text, cited by the Examiner in the anticipation rejection of claim 14 addresses:

> finding a list of candidate cycles by "finding a minimal length cycle for each unordered pair of locations" (Claim 1 amended)

Since the Examiner's rejection of claim 14 (now incorporated into claim 1) fails to meet the standard, set forth above for anticipation, it is requested that the subject rejection be withdrawn and that amended claim 1 be allowed. Claims dependent on claim 1 are allowable for at least the above reasons.

The Examiner's rejection of claim 15 as anticipated is also not supported by the text cited in the Office Action. That text states:

"Also as in the edge redundant case, condition 2 ensures that loopback connections on subgraph R do not travel over the same arc as primary connections on subgraph B, and vice-versa. This ensures that sufficient redundant capacity exists..." (Col. 36, lines 18-23 Finn et al.)

Claim 15 cannot properly be anticipated on a piece-meal basis. Neither Figs. 9 or 10 of Finn et al. nor the associated text of col. 35 l 58 - col. 36 l 23, address "finding a list of candidate cycles" (which might include redundant cycles), and then "removing from the list...redundant cycles" as claimed.

Further, all of the limitations from claim 15 must be considered including all of the limitations from amended claim 1 upon which claim 15 depends. Finn et al.'s description of creation of redundant trees, each of which includes a single cycle having unspecified characteristics, does not treat the cycle separately from the respective tree. As such, Finn et al. does not address:

"wherein finding a list of candidate cycles additionally includes removing from the list of candidate cycles any redundant cycles." (Pending claim 15)

In summary, Finn et al. simple does not focus on "candidate cycles" as claimed.

Finn et al. is completely silent as to method of claim 16. In attempting to support the outstanding rejection of claim 16 the Examiner has stated:

"Finn teaches removing any cycles containing any more than a predetermined maximum number of locations in the cycle sequence (e.g., see col. 27, lines 60-67 regarding maximum number of nodes on a path, inherently restricting or removing cycles which exceed this limit; also, see col. 20, lines 61-63 regarding deciding whether all nodes which should be included are in the cycle)" (Office Action page 6).

Unlike the method of claim 16, col. 27, lines 60-67 of Finn et al. teaches something different than suggested by the Examiner. That text states:

"It should be noted, however, that the trees may be selected to optimize any criteria including and not limited to load, balancing, path costs, reliability of

paths, maximum number of nodes on a path, average number of nodes traversed by a communication session, symmetry of trees, separability of sub-trees maximum load unlink and average transmission costs." (Col. 27, lines 60-67 Finn et al.)

Thus, Finn et al. is describing a selection of trees and is not addressing candidate cycles as claimed. A selection of trees as described above is completely irrelevant to the characteristics of the incorporated cycle of step 52 of Fig. 3 of Finn et al. Merely referring to maximum number of nodes on a path relative to redundant tree structures does not anticipate "wherein finding a list of candidate cycles additionally includes removing any cycles containing more than a predetermined maximum number of locations in the cycles sequence" simply because trees contain more than the single cycle defined by step 52 of the Fig. 3. Figs. 2A, 2B graphically illustrate the fact that trees not only each contain a single cycle but they also contain non-cyclic branches. The optimization referred to by the Examiner in rejecting claim 15 is addressed to optimizing trees under certain conditions not candidate cycles as claimed. Trees can include a plurality of cycles as well as non-cyclic members, see Figs. 2A,B.

The rejection of claim 16 is also defective in that the Examiner has improperly based it on inherency. Inherency requires certainty. Where choices are available there is no inherency. It is quite clear from the text of Finn et al., Col. 27, lines 60-67 that a variety of criteria can be selected for the purpose of evaluating trees. Not only are a variety of alternatives discussed in the noted section, Col. 27, lines 60-67, but the subject matter is not "candidate cycles" as claimed but rather trees which as described above are quite different.

As noted above, inherency cannot be established by possibilities or probabilities. Inherency requires certainty and not speculation. The text cited by the Examiner, Col. 27, lines 60-67 does not meet this standard. Further, the standard is not met by the text cited in Col. 20, lines 61-63. That text states:

"Processing then flows to decision block 64, where a decision is made as to whether the cycle selected in step 52 includes all nodes which should be connected in the graph." (Col. 20, lines 61-63 Finn et al.)

The above text clearly does not make up for the previously noted deficiencies in the text from Col. 27, lines 60-67 of Finn et al. If anything the above text from Col. 20 refers to increasing the size of the selected cycle. It has nothing whatsoever to do with "removing any cycles containing more than a predetermined maximum number of locations in the cycle sequence" as in claim 16.

The rejection of claim 22 as anticipated is also based on non-anticipating text in Finn et al. The Examiner has referred to Col. 17, lines 10-24 of Finn et al. That text has nothing whatsoever to do with the claimed:

> "grooming the traffic demand assigned to the available signal carrying connections of the one or more cycles so as to minimize the amount of network traffic management equipment required for routing the traffic demand." (Claim 22)

Claim 22 defines a process where the above limitation will "minimize" the amount of network traffic management equipment. The text Col. 17, lines 10-24 and 31-40 refer to step 21 of Fig. 1A which describes an exchange of information prior to ever creating any of the redundant trees referred to in Finn et al. This does not anticipate the claimed "grooming...to minimize the amount of network traffic management equipment" as claimed which can only take place after the fact once a network configuration has been defined. The text referred to by the Examiner Col. 17, lines 10-24 and 31-40 provides no information whatsoever as to how traffic demand might be groomed as claimed.

The rejection of claim 29, which depends from claim 22 completely fails to address the "grouping network traffic originating from a common source location" limitation therein. The text cited by the Examiner Col. 17, lines 54-67 is absolutely silent and does not address "grouping network traffic originating from a common source location and being delivered to a common destination location onto the same signal carrying connections" as claimed. That text merely addresses the creation of redundant tree structures. Nor does the additional text of Finn et al. cited by the Examiner Col. 16, line 30-Col. 17, line 9 support the rejection of claim 29 as anticipated. In fact it teaches away from the methodology of claim 29 wherein on Col. 17, lines 4-7 Finn et al. state:

"Thus, all network node information can be sent to one central site where redundant tree topologies are computed in accordance with the techniques described below"

The portion of the text of Finn et al. cited by the Examiner deals with collection of information in a phase prior to generating the redundant tree structures. This refers to step 21 of Fig. 1A and does not address "grouping" as claimed in any way.

The rejection of claim 39 as obvious over Finn et al. based on "Official Notice", see page 10 Office Action, is clearly improper. The limitation from claim 39 has been incorporated into amended claim 35. That limitation which states:

"which includes representing the nodes and links as a graph having weighted edges wherein the weightings of the edges correspond to numbers of fibers in respective links"

cannot properly be the subject of an Official Notice as the only basis for modifying Finn et al. so as to allegedly make claim 39 obvious. As noted in the MPEP:

"For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art." (MPEP Eighth Ed., Rev. 2 (May 2004), page 2100-136)

The Examiner's statement on page 10 of the Office Action namely:

"However, Examiner takes official notice that it is well known in the art of optical communications to weight edges corresponding to the number of fibers"

clearly is improper. If such is the case, this should have been supported by" citation to some reference work recognized as standard in the pertinent art." (MPEP pg 2100-136)

The rejection of claim 39 is not supported by any teaching, disclosure or suggestion of Finn et al. Hence for at least the above reasons claim 35, which incorporates the limitation from claim 39 is allowable. Additionally, claim 35 has been amended to incorporate the limitation from claim 41 which states:

"wherein a pre-stored minimum length criterion is applied to the rings and wherein a set of minimum linked rings is selected and stored." (pending claim 35)

In rejecting claim 41 the Examiner has stated:

Finn teaches a pre-stored minimum link criteria is applied to the rings (e.g., see col. 22, lines 34-45 regarding pre-selected criteria; see also col. 22, lines 6-9 regarding selection of nodes)"(Page 11 Office Action)

However, the above is incorrect. Finn in Col. 22, lines 34-45 states as follows:

"Referring now to FIG. 4, an example of the selection of a cycle and a path are shown. A cycle 88 includes nodes N_1–N_8 with node N_1 designated as a source node. A path 90 beginning and ending on the cycle 88 includes nodes D_1–D_3.

It should be noted that in a node redundant graph, the selection of cycles and paths is made such that a cycle containing the source node N_1 exists and that for any such cycle, a path can be added as described above in conjunction with FIGS. 3-3B. Subsequent such paths can be added, in arbitrary ways in compliance with some preselected criteria, until all nodes to be connected are included in a cycle or a path." (Col. 22, lines 34-45 Finn et al.)

The above is completely silent as to any "pre-stored minimal minimum length criteria" as claimed. Further, Col. 22, lines 6-9 state:

"Decision block 80 implements a loop to continue the processing in steps 72-78 such that the technique continues to add new nodes until all nodes which are desired to be included are included" (Col. 22, lines 6-9)

The above noted two paragraphs clearly do not teach "a pre-stored length criteria" and "selection of nodes" in the context of claim 41. Indeed, unlike claim 41, now incorporated into claim 35, Finn et al. teaches the maximization of lengths of trees for example:

"optimum trees based on a longest path criteria are selected. It should be noted, however, that trees may be selected to optimize any criteria including but not limited to load balancing, path costs, reliability of paths, maximum number of nodes on a path, average number of nodes traversed by a communication session,

symmetry of trees, separability of sub-trees, maximum load on link and average transmission costs." (Col. 27, lines 59-67 Finn et al.)

Selection criteria in Finn et al. relate to trees and not "rings" as claimed. Further, with Finn et al.'s methodology there is no need for, motivation or suggestion to select "a set of minimally linked rings". Finn et al. merely addresses the structure of various trees. Each tree as noted by Finn et al. is based on defining "a cycle around the source node", step 52 Fig. 3 of Finn et al. without further addressing the characteristics of such a cycle.

We also note that the reference to Col. 20, lines 5-13 does not support the rejection of claim 41. That text states:

> "Turning now to Fig. 3, as shown in processing steps 50 and 52, processing begins by defining one of the network nodes N as a source node S and selecting a cycle containing the source node S and selecting a cycle containing the source node S and a plurality, here k, additional nodes denoted as $c_1,\ldots, c_k$. Then, as shown in steps 54, 56 first and second source node values are assigned to the source node in accordance with predetermined criteria. In one particular embodiment, the criteria requires that the second source node value be less than the first source node value." (Col. 20, lines 5-13 Finn et al.)

As noted in Finn et al.:

> "k corresponds to the number of nodes in the cycle excluding the source node." (Col. 20, lines 25, 26 Finn et al.)

The quoted reference to "k" from Finn et al. noted by the Examiner on page 11 simply has nothing whatsoever to do with "wherein a set of minimum link rings is selected and stored". As noted above, Finn et al. focuses on the characteristics and structures of the various trees which are defined therein. They not only include a pre-selected loop, they also include various numbers of non-looping branches of various links, see Fig. 2A and 2B of Finn et al. Thus, for at least the above additional reasons claim 35 has not been properly rejected as obvious and unpatentable over Finn et al. Similar comments apply to the rejection of claims 58 and 59 in view of the above discussion as to the allowability of claim 39.

The rejection of claim 57 as anticipated also does not meet the required standard. At the very least claim 57 is not anticipated nor rendered obvious by Finn et al. in that claim 57 requires:

> "a second plurality of executable instructions wherein a minimum length set of rings, in accordance with a selected link criteria, is selected" (Claim 57)

In rejecting claim 57 as anticipated the Examiner has stated:

> "a second plurality of executable instructions wherein a minimum length set of rings, in accordance with a selected length criteria, is selected (e.g., see col. 29, lines 20-50 regarding selecting a minimum number of connections" (Office Action page 8)

The above reference to col. 29, lines 20-50 refers to various techniques for bandwidth allocation. However, that discussion is completely silent as to the claimed plurality of executable instructions wherein "a minimum length set of rings, in accordance with a selective length criteria, is selected" (claim 57). Once again, this anticipation rejection fails to meet the standard required for a proper rejection based on anticipation. The text in question merely discusses various types of self-healing rings and does not address selecting "a minimal length set of rings" as claimed.

Claim 58, which depends from claim 57, is not obvious in view of the disclosure of Finn et al. as discussed above relative to claim 39.

The limitation of claim 61 has been incorporated, by amendment, into claim 60. As explained below, the anticipation rejection of claim 61, now incorporated in claim 60, is defective. The Examiner has asserted in rejecting claim 61 that:

> "Finn teaches a plurality of instructions for performing a minimal set of dual-homed rings (e.g., cycles) covering the network in accordance with a predetermined criteria (e.g., graphs and subgraphs) (e.g., see col. 18, line 55-col. 39, line 19)" (Page 9 Office Action)

The above statement by the Examiner is inconsistent with the teaching of Finn et al. Claim 61, now incorporated in claim 60 requires:

The above statement by the Examiner is inconsistent with the teaching of Finn et al.. Claim 61, now incorporated in claim 60 requires:

> "a plurality of instructions for performing a minimal set of dual-homed rings covering network in accordance with a predetermined criterion"

Finn et al. addresses selecting pairs of redundant trees in accordance with a predetermined criteria (Col. 27, lines 57-67 thereof) Those selection criteria focus on the various trees, see Fig. 2A, 2B of Finn et al. each of which includes at least one cycle or loop as well as various numbers of non-looping branches of differing lengths. Optimizing tree structures such as Fig. 2A, 2B of Finn et al. is completely different and unlike the claimed optimization relative to "forming a minimal set of dual-homed rings covering the network" the Examiner in rejecting claim 61, page 9 of the Office Action, has failed to identify specifically where in Finn et al. there is any minimization of "dual-homed rings covering the network" as claimed.

The rejections of claims 6 and 7 as obvious over Finn et al. in view of DeMartino do not explain what it is about Finn et al. or DeMartino alone or in combination which would motivate one of skill in the art to modify Finn et al., given the above discussion of the characteristics and deficiencies of Finn et al., so as to make either claim 6 or claim 7 obvious. It is not sufficient, without identifying the required motivation, suggestion or teaching to reject claims 6, 7 as obvious. Those claims are allowable for at least same reasons as discussed above relative to pending claims 1-5.

For at least the above reasons the pending rejected claims are allowable. Allowance of the application is respectfully requested.

Applicant's attorney will shortly contact the Examiner for the purpose of scheduling a telephone interview to discuss the outstanding Office Action and present Amendment.

Respectfully submitted,

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